

Analysis of Low Growth of B2C in Korea

- Focused on Transaction Cost

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Abstract

B2C is not doing well in Asia and Pacific countries in comparison to U.S. and Europe. But there is misunderstanding of low growth of B2C electric commerce caused by cultural factor. Consumers in market are rational to decide their purchase according to total cost - market price and transaction cost. I examined this with data of Korea and U.S. Transaction cost in real market is less in Korea than in U.S. but that of electric commerce, it is much less in U.S. As a result, the choice of consumers in Korea is real market transaction while consumers in U.S. choose electric commerce.

1. Introduction

1.1 Background

At the last day of "First International Conference on Human.Society@Internet" in Seoul from July 4th to July 6th 2001, there was panel discussion program. The first topic was following.

"B2C is not doing well in Asia compares to US and Europe. What are the reasons and What need to be done to change the Asian mindset about B2C?"

The panelist pointed out "the cultural factor" to explain above question. He told that B2C EC showed low growth in Asian countries, contrary to western society, due to the cultural preference to make a deal

looking at each other.

This answer, however, stepped aside from the fact. The term, "cultural factor" usually sounds like truth, but it has also possibility of misunderstanding. So we need to examine carefully whether low growth of B2C in Asian countries is due to cultural factor or not. the Chinese preference to red color, or the Japanese one to green tea, such can be explained for cultural factor, but the case of EC is much different.

'Electric Commerce' is not only 'technology itself', it is to use computer for 'commercial transaction'. It is the part of traditional business, using network, and originally part of economic activities of mankind. From this point of view, I'm going to explain why B2C EC in Asian countries grows less than that of western society, especially focusing on South Korea and

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The First, Transaction Cost

According to the theories of economics, consumers try the most effective method to achieve his goal that is given. That is, consumers would pay the least price for a certain good. In this case, the total cost is the total sum of the market price of the good and transaction cost necessary to buy. In other words, low growth of B2C EC in Korea is due to the fact that the total cost of consumer in South Korea is bigger than that in United States.

The second, Policies of Government

Government policies and law also make trouble. In United States, EC has grown from private business since 1980s, and it has shown the steady growth based on the social-economic background to protect the rights of consumers. The case of Korea, however, is much different. B2B and B2G was begun to lessen the cost of enterprise

and public affairs, especially experiencing IMF relief steps. And the lack of law and system to protect consumers made it to fail to lead consumers to EC, as a result, the portion of B2C is less.

The third, Position of Consumers in the Market, Channel Complication, etc

In modern electric commerce, the factors like the consumers' position in the market, channel complication, the characteristic of goods, etc, they make the B2C EC in Korea grows less than in U.S.

1.2 The Present of Electric Commerce

The estimated amounts of electric commerce are much different according to the institutes, because the definition and standards of electric commerce are not decided yet. But it's true that there is a certain common trend. The following is the table of the amounts of B2B and B2C in each area.

Year	North America	Europe	Asia Pacific	South America	etc.	Total Amount
1999	62%	22%	14%	1%	1%	\$ 145 bill.
2004	38%	32%	26%	2%	2%	\$ 7,290 bill.

Table 1. The Market Shares of B2B Electric Commerce [1]

Year	North America	Europe	Asia Pacific	etc	Total Amount
2000	238	28	19	3	\$ 28.9 bill.
	82.35%	9.69%	6.57%	1.04%	100%
2004	1,590	343	207	46	\$ 218.5 bill.
	72.77%	15.7%	9.47%	2.11%	100%

Table 2. The Market Shares of B2C Electric Commerce [1]

	United States (unit : 100 mil. \$)			Korea (unit : mil. \$)		
	1999	2000	2001	1999	2000	2001
B2C	194	370	577		57	96
B2B	551	1240	2459		229	389
Total	745	1610	3036		286	485
<i>B2C/B2B</i>	<i>35.21%</i>	<i>29.84%</i>	<i>23.46%</i>		<i>24.89%</i>	<i>24.68%</i>
<i>B2C/Total</i>	<i>26.04%</i>	<i>22.98%</i>	<i>19%</i>		<i>19.93%</i>	<i>19.79%</i>
<i>B2B/Total</i>	<i>73.96%</i>	<i>77.02%</i>	<i>81%</i>		<i>80.07%</i>	<i>80.21%</i>

Table 3. The Market Shares of B2B and B2C in U.S. [1]

As shown above, B2B of Asia/Pacific is 14% of the world market, but B2C of Asia/Pacific is only 6.57%. B2C of U.S. is 29.84% of B2B, and 22.98 of whole market share, but B2C of Korea is 24.89% of B2B, and 19.9% of whole market share. Each of them is less than that of U.S. by 5% and 3%.

2. Cost

2.1 Transaction Cost

Every economic activities of market require cost. Economic cost includes potential costs like opportunity cost as well as specified cost. Transaction cost, part of economic cost, means all related costs accompanied by purchase, and becomes much different with transaction situation even with same economic entities and same goods.

So, whether to purchase a certain good in real market transaction or by electric commerce on network, is decided by the total sum of selling price and transaction cost of the good. This economic activity coincides with the assumption of rational

expectation.

The elements of transaction cost includes time cost, order cost, transportation cost, risk, etc that occurred in the transaction of consumer in real market and B2C electric commerce. In the real market transaction, time cost is the biggest, but risk cost in B2C EC is necessary in addition. So consumer usually makes decision of purchase after considering all related costs above. The table below shows costs of transaction in real market and electric commerce.

2.1.1 Time Cost

Most individual purchases are done on weekend or after work time. From this point, time cost must be considered carefully, because weekend purchase means the consumption of leisure time that might be very expensive.

The value of unit time per labor is proportional to the wage of unit time, so the time cost for individual consumption can be calculated like this.

Costs	
Transaction in Real Market	B2C Electric Commerce
Market Price of Good	Price of Good in Electric Commerce
Time Cost (Search Cost)	Order Cost (Network Use Fee, Delivery Fee, etc)
Transportation Cost	(Opportunity Cost of Risk)
<p>Transportation Cost : Cost necessary to move from consumers' home to market</p> <p>Time Cost : Total Elapsed Time for Purchase</p> <p>Search Cost : Cost for search of the good to purchase</p> <p>Delivery Cost : Cost from Order to Receipt</p> <p>Opportunity Cost of Risk : Cost of Purchase failed</p>	

Table 4. Total Costs of Real Market Transaction and B2C Electric Commerce

	GDP per capita	Total Work Hour per Year	Time Cost	Average Transaction Cost (1)	Proportion to (1)
Korea	\$ 8,680	46.1 hr * 52 weeks	\$ 3.62	\$ 42.45	8.52%
U.S.	\$ 33,666	41.7 hr * 52 weeks	\$ 15.4	\$ 75	20.5%

Table 5. Time Costs of Consumer in Korea and U.S. [9]

Time Cost = GDP per Capita / Total Work Hour per Year

The table below is GDP per capita and total work hour per year in 1999.

In the table, time cost of consumer in Korea is higher than that of U.S. If consumer of U.S. uses 1 hour to buy good of \$75, his total cost will be \$90.4 with time cost, \$15.4. It is %20.5 of average transaction cost a time of electric commerce, which is big portion. To the contrary, consumer of Korea pays \$3.62 an hour, which is only 8.52% of average transaction cost a time. That is, time cost of consumer in U.S. is 2.4 times of that of Korea. In this situation, it is rational to use

electric commerce on network instead transaction in real market.

2.1.2 Transportation Cost

If same good is to be sold at ₩10,000 in Store A, and at ₩11,000 in Store B, then everybody will buy it in Store A. But, If the transportation cost to store A is bigger than that of store B by ₩1,000 or more, then most consumer will choose store B. In fact, time cost, search cost, information cost and others must be considered in reality. Other conditions, however, being constant, transportation cost is the second factor to time cost during purchase.

It is unavoidable that the expansion of city follows population increase. In 1990s, the population of U.S. has been increased

rapidly to 10% increase of whole population, and a quarter of all cities have expansion syndrome. This phenomenon creates words like 'Suburbs' or 'Boomburbs'. Residents near the big cities spend about 3 hours a day during the rush hours, and they have to drive away their car for hours to go to shopping mall or big discount store near highway, because there little stores in the center of city. Popular transportation is much worse. In Portland, which is the best city for popular transportation in U.S., 90% of residents use their own car during the rush hours. [14] In other words, popular transportation is 'scarce' and 'expensive'. In this situation, it is more favorable to use electric commerce to buy goods instead of going to distant shopping mall. the following table shows

transportation costs of consumers in Korea and U.S. to shopping mall or big discount stores in Daejeon Korea and Atlanta Georgia.

Individual transportation cost is calculated from transportation distance, fuel price, and fare of popular transportation with actual measurement and map. Selected shopping mall, discount store, transportation distance, and costs are follows.

Popular transportation cost is the fare of bus and subway that are main transportation in two cities. For Daejeon, it is the average cost of bus and seat bus, and for Atlanta, bus and subway are simultaneously available by payment a time. Fuel price is estimated as ₩1,300 per liter in Korea and \$1.325 per gallon in U.S.

Transportation cost	City	Individual Transportation Cost (1)	Popular Transportation Cost (2)	Portion to Monthly Income (1)	Portion to Monthly Income (2)
	Daejeon	₩ 1,706.25	₩ 1,800	0.18%	0.19%
Atlanta	₩ 5,077.97	₩ 3,900	0.14%	0.11%	
Remark	fuel cost for round trip	fare for round trip	Year 1999	Year 1999	

Table 6. Transportation Costs of Daejeon Korea and Atlanta Georgia

	Costco Wholesale	Carrfour	Lotte Shopping	Wall Mart
Transportation Distance	2 Km	5 Km	4 Km	10 Km
Cost (Fuel Cost for Round Trip)	₩ 650	₩ 1,625	₩ 1,300	₩ 3,250

Table 7. Big Discount Stores, Shopping Malls in Daejeon and Transportation Costs

	Peachtree Center	Tanger Metro	Mall of Georgia	Tanger Dalton
Transportation Distance	16 Km	8 Km	112 Km	88 Km
Cost (Fuel Cost for Round Trip)	₩ 1,450.56	₩ 725.28	₩ 10,153.92	₩ 7,978.08

Table 8. Big Discount Stores, Shopping Malls in Atlanta, Georgia State

The aspect of transportation cost of consumers in Daejeon is 0.18% and 0.19% of monthly income, for consumers in Atlanta is 0.14%, 0.11% of monthly income. But only two shopping malls are accessible by popular transportation in Atlanta, another two places can't be reached without owner's car. Despite the transportation cost of Daejeon is little higher than that of Atlanta, but the difference is little, only 0.04%, but 2.4 times of gap in time costs. That means, consumers' decision is mainly due to time cost, network use fee and expected risk of transaction rather than transportation cost.

2.1.3 Network Cost

The use of electric commerce needs network use, which must be paid. If user uses network service for 20 hours a month, Internet connectivity costs of Korea is \$22.45, and one of U.S. is \$30.05. At surface, the cost of U.S. is higher, but monthly network cost of Korea is 0.26% of GDP per capita, and one of U.S. is only 0.089% of GDP per capita. In the aspect of GDP per capita, Internet connectivity cost of Korea is 2.92 times of one of U.S. This

high cost of network use make consumers to purchase goods in real market, not electric commerce

2.1.4 Cost of Transaction Risk

Various risk factors follows transaction. Especially, risk level, which occurred by uncertainty, is much higher in electric commerce. The uncertainty of electric commerce includes uncertainty of goods and that of transaction. The former is related that consumers only can get information from image, voice, or text, not from real sense, and the latter is occurred when payment, authentication, non-repudiation, as such are not confident.

If such risk occurs in real, then the loss of consumer is more than the amount paid in advance. It includes opportunity cost as well as other costs.

Several researchers already pointed out this problem. According to Lee, Dong-Won, Korean consumers perception of risk is higher than that of U.S. about goods and transaction itself. [2]

The table below shows the perceived risk of consumers in Korea and U.S.

	Phone	ISP	Total	GDP per capita	Portion to GDP per capita
Korea	\$ 13.96	\$ 8.49	\$ 22.45	\$ 8,680	0.2586%
U.S.	\$ 10.1	\$ 19.95	\$ 30.05	\$ 33,666	0.089%

Table 9. Internet Connectivity Costs of Korea and U.S. [4][5][11]

	Functional Loss		Time Loss		Economic Loss		Physical Harm		Opportunity Cost		N
Korea	4.28	1.44	4.86	1.33	4.28	1.33	4.33	1.50	4.77	1.39	64
U.S.	3.28	1.69	4.66	1.70	4.91	1.79	3.00	1.78	3.66	1.53	67
Avg.	3.77	1.64	4.76	1.53	4.60	1.83	3.65	1.77	4.20	1.56	131

Table 10. Perceived Risk with the Products/Services

	Connectivity		Speed		Privacy		Non-repudiation		Authentication		N
Korea	3.70	1.70	4.31	1.69	5.28	1.47	4.80	1.49	4.66	1.64	64
U.S.	1.97	1.34	3.54	2.07	4.97	1.75	3.82	1.80	3.67	2.01	67
Avg.	2.82	1.75	3.92	1.93	5.12	1.62	4.30	1.72	4.15	1.90	131

Table 11. Perceived Risk in the Context of Transaction

	Easy Search		Variety		Information		Easy Order		Low Price		N
Korea	4.19	1.50	4.33	1.74	4.31	1.45	5.28	1.30	4.84	1.28	64
U.S.	5.07	1.44	5.58	1.29	5.04	1.30	6.19	0.93	5.39	1.41	67
Avg.	4.64	1.53	4.97	1.65	4.69	1.41	5.75	1.21	5.12	1.37	131

Table 12. Perceived Risk in the Context of Transaction

Concerned with negative factors, Korean consumers perceive risk higher than consumers of U.S. For positive factors, Perception of consumers in U.S. is higher.

Under this situation, it is natural that B2C portion in Korea is lower than U.S. and more, reflexive principle says, what happen to market is affected by the observation of observers. So, the negative observation would be the obstacle of growth of B2C in Korea.

2.2 Other Factors

2.2.1 Law and Policy of Government

Law and policy of Korean government have been imperfect. In U.S. the growth of electric commerce was natural result from the demand private sector. In Korea, however, government has driven electric commerce, especially in B2B and B2G, to reduce costs. It has encouraged corporation to join electric commerce, stimulating them with policy, law, and subsidiary. As a result, B2C shows low growth, contrary to high growth of B2B in

Korea.

2.2.2 Consumer's Position and Behavior in Market

Imperfection of law and policy to protect consumers, results in the decline of consumer's position in market, for example, consumers are usually asked to pay in cash, not credit card even in electric commerce, and the websites without address, telephone number, and registration codes are easily found among internet shopping malls.

Weak position of consumer discourages the consumption in electric commerce.

2.2.3 channel complication

The channel complication between EC and traditional market is unavoidable when electric commerce is being introduced. In long-term period, it can be developed in new turn like "Click & Mortar". But effort to change is still insufficient. It remains as obstacle yet.

3. Conclusion

This research explains that low growth of B2C in Korea is due not to cultural factor, but to consumers' rational choice considering transaction cost. And the problems like government policy to raise B2B and B2G, imperfection of law, channel complications, becomes obstacles to growth of B2C electric commerce. From these facts, the answer of question - "B2C is not doing well in Asia compares to US and Europe. What are the reasons and what need to be done to change the Asian mindset about B2C?" - can be found as follows.

3.1 Low growth of B2C in Korea

The first, transaction cost in real market in Korea is less than in U.S. transaction cost includes transportation cost, time cost, search cost, order cost, opportunity cost of risk, etc. The total cost to purchase a certain good, is the sum of market price and transaction cost. Because the total cost in real market is less than in B2C, Korean consumer show less preference to B2C.

It mainly comes from very low time cost, high cost of network use, highly perceive risk.

The second, imperfection of law and policy

The third, consumer's position and behavior in market

The forth, channel complication

3.2 The Encouragement of B2C in Korea

For encouragement of B2C in Korea, decrease of transaction cost and supplement of law and policy are necessary.

Because it is little possible to decrease transportation cost due to the physical restraint, risk perception, network use cost, and time cost must be decreased. It will surely encourage B2C electric commerce. [3]

The factors to lead high growth of electric commerce in U.S. are following.

- (1) Society based on trust
- (2) Advanced marketing for online commerce
- (3) Heavy penalty on fraud
- (4) Good physical infrastructure for delivery

- (5) PC & High speed network
- (6) Low cost enabling service by technological advantage
- (7) Rapid technology development and commercialization with financial capital

- (8) Innovation of management by steady restructuring and reengineering

These factors have effected on electric commerce as follows.

Factors	Encouragement of EC	Beneficiary
Society based on Trust	Decrease of Risk	Consumer, Business
Advanced Online Marketing	Familiar to Consumer Decrease of Search Cost	Consumer
Heavy Penalty on Fraud	Decrease of Risk	Consumer, Business
Physical Infrastructure for Delivery	Decrease of Order Cost and Time Cost	Consumer
PC and High Speed Network	Easy Access Decrease of Search Cost Decrease of Order Cost	Consumer
Low Cost Enabling Service	Decrease of Operational Cost	Business
Rapid Technology Development and Commercialization	Increase of Opportunity for Business and Benefit	Business
Steady Management Innovation	Easy Conversion of Business Increase of Benefit	Business

Table 13. Encouragement Factors of Electric Commerce in U.S

Reference

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